AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A paper-like sheet discriminator having a paper-like sheet thickness detection device for detecting a thickness of a paper-like sheet on paper-like sheet conveyance along the total length of said paper-like sheet, ~~wherein~~ said paper-like sheet discriminator comprising:

~~wavelength components~~ wavelength extracting means for extracting signal waveform with less than a specified wavelength ~~are extracted~~ from a thickness signal detected by said paper-like sheet thickness detection device,

appearance positions extracting means for extracting appearance positions ~~on said paper-like sheet are determined~~ at which amplitude of the signal waveform ~~the~~ extracted by the wavelength extracting means ~~wavelength components being less than the specified wavelength and having~~ has amplitude not less than a constant value appear, ~~and~~

collating means for collating the thus determined appearance positions by the said appearance position extracting means ~~are collated~~ with precedently stored appearance positions on said paper-like sheet at which the ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude not less than the constant value appear, and

judging means to judge genuineness/spuriousness of said paper-like sheet.

wherein said judging means judge whether or not the appearance positions extracted by said appearance positions extracting means with the appearance positions on said paper-like sheet at which the amplitude of the signal waveform with less than said specified wavelength has the amplitude not less than the constant value appear so as to discriminate genuineness/spuriousness of said paper-like sheet.

2. (Currently Amended) A paper-like sheet discriminator having a paper-like sheet thickness detection device for detecting a thickness of a paper-like sheet on the paper-like sheet conveyance along the total length of said paper-like sheet, ~~wherein~~said paper-like sheet discriminator comprising:

passing position detecting means for a longitudinal positional course along which said paper-like sheet passes through said paper-like sheet thickness detection device ~~is detected~~,

~~wavelength components~~ wavelength extracting means for extracting signal waveform less than a specified wavelength ~~are extracted~~ from a thickness signal detected by said paper-like sheet thickness detection device,

appearance position extracting means for appearance positions ~~on said paper-like sheet are determined~~ at which the extracted ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has amplitude not less than a constant value appear, ~~and~~

collating means for collating the thus determined appearance positions by the said appearance position extracting means ~~are collated~~ with precedently stored appearance positions on said paper-like sheet, corresponding to said longitudinal positional course for passage of said paper-like sheet and at which said

~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude not less than the constant value appear, and

judging means to judge genuineness/spuriousness of said paper-like sheet,

wherein said judging means judge whether or not the appearance positions extracted by said appearance positions extracting means is same with appearance positions on said paper-like sheet, corresponding to said longitudinal positional course for passage of said paper-like sheet and at which said amplitude of the signal waveform with less than said specified wavelength has the amplitude not less than the constant value appear so as to discriminate genuineness/spuriousness of said paper-like sheet.

3. (Currently Amended) A paper-like sheet discriminator according to claim 1, ~~wherein~~ further comprising subtracting means that subtract precedently stored ~~wavelength~~ said paper-like sheet signal waveform with less than a specified wavelength from the signal waveform extracted by said wavelength extracting means, ~~components less than a specified wavelength are extracted from a paper-like sheet thickness detection signal, a waveform obtained by extracting the wavelength components less than said specified wavelength of said thickness detection signal is subtracted from the waveform having the extracted wavelength components less than said specified wavelength to~~

wherein said appearance position extracting means determine appearance positions on said paper-like sheet at which the extracted ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified

wavelength ~~and having~~ has amplitude not less than a constant value appear using the output waveform from said subtracting means,, ~~and~~

wherein said collating means collate the thus determined appearance positions by said appearance position extracting means ~~are collated~~ with precedently stored appearance positions on said paper-like sheet at which said ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude not less than said constant value appear, and

wherein said judging means judge amplitude of the signal waveform with less than said specified wavelength appears elsewhere from said precedently stored appearance positions, so as to ~~discriminate~~ judge ~~genuineness~~/spuriousness ~~of said paper-like sheet~~.

4. (Currently Amended) A paper-like sheet discriminator according to claim 2, ~~wherein~~ further comprising subtracting means that subtract precedently stored ~~wavelength~~ said paper-like sheet signal waveform with less than a specified wavelength from the signal waveform extracted by said wavelength extracting means, ~~components less than a specified wavelength are extracted from a paper like sheet thickness detection signal, a waveform obtained by extracting the wavelength components less than said specified wavelength of said thickness detection signal is subtracted from the waveform having the extracted wavelength components less than said specified wavelength to~~

wherein said appearance position extracting means determine appearance positions on said paper-like sheet at which the extracted ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified

wavelength ~~and having~~ has amplitude not less than a constant value appear using the output waveform from said subtracting means, ~~and~~

wherein said collating means collate the thus determined appearance positions by said appearance position extracting means ~~are collated~~ with precedently stored appearance positions on said paper-like sheet at which said ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude not less than said constant value appear, and

wherein said judging means judge amplitude of the signal waveform with less than said specified wavelength appears elsewhere from said precedently stored appearance positions, so as to ~~discriminate~~ judge ~~genuineness/~~spuriousness ~~of said paper-like sheet~~.

5. (Currently Amended) A paper-like sheet discriminator according to claim 1, wherein said appearance positions extracting means determine appearance positions on the paper-like sheet ~~are determined~~ at which said extracted ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has amplitude not ~~less~~ greater than the constant value appear, and

wherein said collating means collate the thus determined appearance positions ~~are collated~~ with precedently stored appearance positions, corresponding to a longitudinal positional course for passage of said paper-like sheet and at which said ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude not ~~less~~ greater than said

constant value appear, so as to discriminate genuineness/spuriousness of said paper-like sheet.

6. (Currently Amended) A paper-like sheet discriminator according to claim 2, wherein said appearance positions extracting means determine appearance positions on the paper-like sheet ~~are determined~~ at which said extracted ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has amplitude not ~~less~~ greater than the constant value appear, and

wherein said collating means collate the thus determined appearance positions ~~are collated~~ with precedently stored appearance positions, corresponding to a longitudinal positional course for passage of said paper-like sheet and at which said ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude not ~~less~~ greater than said constant value appear, so as to discriminate genuineness/spuriousness of said paper-like sheet.

7. (Currently Amended) A paper-like sheet discriminator according to claim 1, ~~wherein~~ further comprising a plurality of paper-like sheet thickness detection devices ~~are provided~~ orthogonally to the conveyance direction of paper-like sheet, and

collating means to collate the continuity of appearance positions at which ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than the specified wavelength ~~and having~~ has amplitude not less than or not greater than a constant value appear ~~is collated~~ mutually between adjacent paper-like sheet

thickness detection devices, so as to discriminate genuineness/spuriousness of the paper-like sheet.

8. (Currently Amended) A paper-like sheet discriminator according to claim 2, ~~wherein~~ further comprising a plurality of paper-like sheet thickness detection devices ~~are provided~~ orthogonally to the conveyance direction of paper-like sheet, and collating means to collate the continuity of appearance positions at which ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than the specified wavelength ~~and having~~ has amplitude not less than or not greater than a constant value appear ~~is collated~~ mutually between adjacent paper-like sheet thickness detection devices, so as to discriminate genuineness/spuriousness of the paper-like sheet.

9. (Currently Amended) A paper-like sheet discriminator according to claim 1, wherein appearance positions at which ~~wavelength components~~ amplitude of the signal waveform of said paper-like sheet ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude either not less than or ~~less~~ not greater than said constant value appear are precedently stored in a geometrical expression of a coordinate system having its origin at an intersection of two orthogonal sides of said paper-like sheet, and positions, corresponding to the longitudinal positional course for passage of said paper-like sheet ~~and~~ at which the ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude either not less than or ~~less~~ not greater than said constant value appear, are determined through calculation.

10. (Currently Amended) A paper-like sheet discriminator according to claim 2, wherein appearance positions at which ~~wavelength components~~ amplitude of the signal waveform of said paper-like sheet ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude either not less than or ~~less~~ not greater than said constant value appear are precedently stored in a geometrical expression of a coordinate system having its origin at an intersection of two orthogonal sides of said paper-like sheet, and positions, corresponding to the longitudinal positional course for passage of said paper-like sheet ~~and~~ at which the ~~wavelength components~~ amplitude of the signal waveform ~~being~~ with less than said specified wavelength ~~and having~~ has the amplitude either not less than or ~~less~~ not greater than said constant value appear, are determined through calculation.

11. (Currently Amended) A paper-like sheet discriminator according to claim 1, wherein for extraction of the wavelength from the thickness detection signal, a wavelength, which is less than ~~a detection width~~detector length of said paper-like sheet thickness detection device being in contact with or projected upon said paper-like sheet ~~thickness detection device~~ in the conveyance direction of said paper-like sheet, is extracted.

12. (Currently Amended) A paper-like sheet discriminator according to claim 2, wherein for extraction of the wavelength from the thickness detection signal, a wavelength, which is less than ~~a detection width~~ detector length of said paper-like sheet thickness detection device being in contact with or projected upon said paper-like sheet ~~thickness detection device~~ in the conveyance direction of said paper-like sheet, is extracted.

13. (Currently Amended) A paper-like sheet discriminator according to claim 1, wherein for extraction of signal waveform with less than the wavelength, ~~from said thickness detection signal, a~~ signal waveform with wavelength of ~~less~~ not greater than 0.8 mm is extracted.

14. (Currently Amended) A paper-like sheet discriminator according to claim 2, wherein for extraction of signal waveform with less than the specified wavelength, ~~from said thickness detection signal, a~~ signal waveform with wavelength of ~~less~~ not greater than 0.8 mm is extracted.

15. (Currently Amended) A paper-like sheet discriminator having a paper-like sheet thickness detection device for detecting a thickness of a paper-like sheet on the paper-like sheet conveyance along the total length of said paper-like sheet, ~~wherein~~comprising

wavelength extracting means for extracting wavelengths in a specified range and~~are detected from a thickness detection signal of the paper-like sheet detected by said paper-like sheet thickness detection device,~~

~~an integral value of~~ integral means for integrating the full-wave rectified waveform of the waveform extracted by said wavelength extracting means, and ~~rectification of the wavelengths in said specified range is determined and collated with a precedently stored integral value of full-wave rectification of the wavelengths in said specified range~~

collating means collate said integral value with a constant value,

wherein said collating means judge said integral value is not less than a constant value, so as to ~~detect~~ determine crumples in said paper-like sheet.

16. (Currently Amended) A paper-like sheet discriminator having a paper-like sheet thickness detection device for detecting a thickness of a paper-like sheet on the paper-like sheet conveyance along the total length of said paper-like sheet, ~~wherein~~comprising:

passing position detecting means for detecting a longitudinal positional course along which the paper-like sheet passes through a thickness detector of said paper-like sheet thickness detection device ~~is detected~~,

wavelength extracting means for extracting wavelengths in a specified range ~~are extracted from a thickness detection signal of the paper-like sheet~~ from signal detected by said paper-like sheet thickness detection device,

integral means for integrating the ~~an integral value of~~ full-wave rectified waveform of the waveform extracted by said wavelength extracting means, and ~~rectification of wavelengths in the specified range is determined, and the thus determined integral value is compared with an integral value of full-wave rectification of the wavelengths in the specified range precedently stored in correspondence with said longitudinal positional course for passage of said paper like sheet~~

collating means collate the integral value in correspondence with said passing position with a constant value, and

judging means to judge genuineness/spuriousness of said paper-like sheet.

wherein said judging means judge the integral value in correspondence with said passing position is not less than the constant value, so as to ~~detect~~ determine crumples in said paper-like sheet.

17. (Original) A paper-like sheet discriminator according to claim 15, wherein the wavelengths in said specified range are 1mm to 2 mm.

18. (Original) A paper-like sheet discriminator according to claim 16, wherein the wavelengths in said specified range are 1mm to 2 mm.